

CLAIMS

What is claimed is:

1. A semiconductor device comprising:
a lead frame having a plurality of lead fingers thereon, at least one lead finger of said plurality of lead fingers having an attaching surface;
a semiconductor die having an active surface having at least one bond pad thereon configured for electrical connection to said at least one lead finger of said plurality of lead fingers of said lead frame; and
a non-conductive polymer adhesive selected from the group of adhesives that is tacky and compliant at room temperature, said non-conductive polymer adhesive applied to one of said attaching surface of said at least one lead finger of said plurality of lead fingers of said lead frame and a portion of said active surface of said semiconductor die for compression therebetween to electrically connect said at least one bond pad of said semiconductor die to said at least one lead finger of said plurality of lead fingers of said lead frame, said non-conductive polymer adhesive including a first material from the group of copolymers that includes isobutyl compounds and a second material that is from a group of metal oxides.
2. The semiconductor device of claim 1 wherein a first portion of said non-conductive polymer adhesive is isobutyl acetal diphenol copolymer.
3. The semiconductor device of claim 1 wherein said non-conductive polymer adhesive includes a first material from a group of copolymers that includes isobutyl acetal diphenol copolymer and a second material that is from a group of metal oxides that includes titanium dioxide.

4. The semiconductor device of claim 3 wherein said non-conductive polymer adhesive has from about 75 percent to about 95 percent by weight of isobutyl acetal diphenol copolymer and from about 25 percent to about 5 percent by weight, respectively, of titanium dioxide.

5. A semiconductor device comprising:
a lead frame having a plurality of lead fingers thereon, each lead finger of said plurality of lead fingers having an attaching surface;
a semiconductor die having an active surface having bond pads thereon configured for electrical connection to each said lead finger of said plurality of lead fingers of said lead frame; and
a non-conductive polymer adhesive selected from the group of adhesives that is tacky and compliant at room temperature and is applicable to a substrate through a stencil, said non-conductive polymer adhesive being applied to one of said attaching surfaces of said plurality of lead fingers of said lead frame and a portion of said active surface of said semiconductor die for compression therebetween to electrically connect said bond pads of said semiconductor device to said plurality of lead fingers of said lead frame, said non-conductive polymer adhesive includes a first material from the group of copolymers that includes isobutyl compounds and a second material that is from a group of metal oxides.

6. The semiconductor device of claim 5, wherein a first portion of said non-conductive polymer adhesive is isobutyl acetal diphenol copolymer.

7. The semiconductor device of claim 5, wherein said non-conductive polymer adhesive includes a first material from a group of copolymers that includes isobutyl acetal diphenol copolymer and a second material that is from a group of metal oxides that includes titanium dioxide.

8. The semiconductor device of claim 7, wherein said non-conductive polymer adhesive has from about 75 percent to about 95 percent by weight of isobutyl acetal diphenol copolymer and from about 25 percent to about 5 percent by weight, respectively, of titanium dioxide.

9. A semiconductor device comprising:
a lead frame having a plurality of lead fingers having attaching surfaces thereon;
a semiconductor die having an active surface having at least one bond pad thereon for electrical connection to at least one lead finger of said plurality of lead fingers of said lead frame;
and
a non-conductive polymer adhesive which includes a first material from a group of copolymers that includes isobutyl acetal diphenol copolymer and a second material that is from a group of metal oxides that includes titanium dioxide, said non-conductive polymer adhesive being applied to one of said attaching surfaces of said plurality of lead fingers and a portion of said active surface of said semiconductor die for compression therebetween to connect said semiconductor device to said at least one lead finger of said plurality of lead fingers of said lead frame.

10. A semiconductor device comprising:
a lead frame having an attaching surface thereon;
a semiconductor die having at least one bond pad on an active surface thereof; and
an adhesive that includes from about 75 percent to about 95 percent of isobutyl acetal diphenol copolymer and from about 25 percent to about 5 percent, respectively, of titanium dioxide, said adhesive being applied to one of said attaching surface of said lead frame and said at least one bond pad of said semiconductor device for compression therebetween to electrically connect said at least one bond pad of said semiconductor die to said attaching surface of said lead frame.

11. A semiconductor device comprising:

a lead frame having a plurality of lead fingers thereon, each lead finger of said plurality of lead fingers having an attaching surface thereon;

a semiconductor die having an active surface having a plurality of bond pads thereon configured for electrical connection to said plurality of lead fingers of said lead frame; and

a non-conductive polymer adhesive which includes a first material from a group of copolymers that includes isobutyl acetal diphenol copolymer and a second material that is from a group of metal oxides that includes titanium dioxide, said non-conductive polymer adhesive being applied to one of said attaching surfaces of said lead fingers of said plurality of lead fingers and said active surface of said semiconductor die for compression therebetween to connect said active surface of said semiconductor die to said attaching surfaces of said plurality of lead fingers of said lead frame.

12. A device comprising:

a lead frame having an attaching surface;

a semiconductor die having bond pads on an active surface thereof configured for electrical connection to said lead frame; and

an adhesive that includes from about 75 percent to about 95 percent of isobutyl acetal diphenol copolymer and from about 25 percent to about 5 percent, respectively, of titanium dioxide, said adhesive being applied to one of said attaching surface of said lead frame and said semiconductor die for compression therebetween to connect said active surface of said semiconductor device to said attaching surface of said lead frame.